UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

SEP 8 2000

Site: MADISON MINE Auschutz Mining Corp
ID #: MOD 098 633415
Break: 2.0
Other: 9-8-2000

ACTION MEMORANDUM

SUBJECT: Request for Removal Action and 12-month and $2 Million exemptions at the Harmony Lake Subsite of Operable Unit 1 of the Madison County Mine Site, Madison County, Missouri

FROM: James O. Silver, On-Scene Coordinator
EPA, Region 7

THRU: Robert W. Jackson, Chief
Emergency Response & Removal Branch

TO: Michael J. Sanderson, Director
Superfund Division

Site ID#: LT
Category of Removal: Time-Critical
CERCLIS ID #: MODO98633415
Nationally Significant/Precedent Setting: No

I. PURPOSE

The purpose of this Action Memorandum is to request approval and funding for a time-critical removal action at the Harmony Lake Subsite ("Subsite") of the Madison County Mine Site, Operable Unit 1 ("OU1"), which lies in the northeast quarter of Madison County, Missouri, and to request a $2 million dollar statutory exemption and a 12-month exemption. More specifically, a portion of OU1 known as Harmony Lake is the location where removal actions would be undertaken. Residential property where the soil contains lead concentrations equal to or greater than 400 milligrams per kilogram (mg/kg) will be included in the removal action. The Harmony Lake tailings pile, which covers approximately 30 acres, will be covered with a one-foot soil cover under the scope of this removal action. The primary objectives of this action are to eliminate or reduce ingestion exposure due to the presence of lead in the soils at the Subsite and to stabilize the tailings pile.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Background

OU1 of the Madison County Mine Site is located in the northeast quarter of Madison County, Missouri, ranging from three to five miles from the township of Fredericktown, Missouri. OU1 consists of four major mining features or subsites that are referred to as the Mine La Motte tailings pile, the Harmony Lake tailings pile, the Basler tailings pile, and the Old Jack Mine.

OU1 is located in what is commonly referred to as the "Old Lead Belt" where mining activity was first recorded about 1742 and continued into the 1970s. The mining and milling of ore in the Old Lead Belt produced an estimated 250 million tons of tailings/waste. Surface runoff from all four Subsites eventually flows into the Little St. Francis River.

The Mine La Motte tailings pile is the largest of the tailings deposits at OU1 covering approximately 250 acres. Adjacent to this deposit is a 100-acre lake named Slime Pond. The property was previously used for the processing and production of lead. Currently, the majority of the property is owned by the Mine La Motte Recreation Association (MLMRA) and is used as a recreation center for fishing, swimming, water skiing, hunting, and off-road vehicles. Nearly all of the property on which the tailings are located is owned by the MLMRA whose members total 400 families. Smaller portions of the deposit lie on properties owned by Mr. George Toppins and Ronald Ward. Tailings have migrated from this deposit via surface runoff and wind erosion. Three samples of the tailings collected during an Expanded Site Inspection (ESI) in 1995 identified lead concentrations ranging from 708 parts per million (ppm) to 1,130 ppm.

The Basler tailings pile is located on property approximately .25 miles east of Highway 67 on Copper Mines Road. The tailings cover approximately 20 acres owned by Mr. David Basler. Mr. Basler alleges the property was mined for lead until the 1930s. A mine shaft is still present west of the tailings deposit. The lead concentration in a tailings sample collected during the 1995 ESI was 4,620 ppm.

The Old Jack Mine tailings have not been previously investigated by EPA. Historical records indicate this was a very productive mine during 1869 and 1870. Records show that mining continued under a number of different companies up through the early 1900s. At one time the mine was operated as a joint venture between St. Joe Mining and National Lead. A drive-by of the location indicated the area is heavily vegetated.

The subject of this removal action, the Harmony Lake Subsite, is located approximately one-quarter mile west of Highway OO, south of Copper Mines Road. The Subsite consists of a 30-acre tailings pile and approximately 50 acres of residential/recreational properties surrounding

Harmony Lake. Several mobile homes are also located on the tailings pile. Harmony Lake is located adjacent and to the north of the tailings, and its dam is believed to be constructed with mine tailings. Copper Mines Road runs along the dam of Harmony Lake. The origin of Harmony Lake is not known; but may be mine related. Residential properties, and part-time and full-time residences consisting of trailers, mobile homes, and permanent single-family dwellings surround most of the lake. Several small piles (5-10 cubic yards) of tailings have been observed in the development, but wide-spread deposition of tailings at these residences may not be present. One tailings sample, collected during the 1995 ESI, detected lead at a concentration of 7,310 ppm.

2. Physical Location

The Subsite is located in the northeast quarter of Madison County, Missouri, and covers approximately 110 acres. The map included as Attachment 1 shows the location of the mine waste features that make up OU1 including the Subsite.

3. Subsite Characteristics

The Subsite encompasses properties used for both residential, recreational, and commercial purposes. Lakefront properties are a mixture of residential lots, full-time residences, part-time recreational dwellings such as trailers and cabins, swimming beaches, and picnic areas.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

Lead is a hazardous substance as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and is listed at 40 C.F.R. § 302.4. Sampling and analysis have confirmed the levels of lead in surface soils are high in several residential locations.

5. National Priorities List Status

The site is not currently listed, nor proposed for listing, on the National Priorities List.

6. Supporting Documentation

All reports of investigations, reports of sampling and analysis, and other relevant documents regarding the contamination at the Subsite will be contained in the Subsite's Administrative Record. The Administrative Record is currently being developed.

B. Other Actions to Date

1. Previous Actions

The Madison County Health Department has been diligently pursuing blood-lead screening of children six months to six years of age in the county. Many of the children tested have blood-lead levels greater than acceptable levels. It is not known how many children between six months and six years of age reside at Harmony Lake or whether any children who reside at Harmony Lake have elevated blood-lead levels.

On March 30, 1999, potentially responsible parties (PRPs), the Doe Run Resources Company and NL Industries, Inc., entered into an Administrative Order on Consent to conduct additional characterization studies at OU1. During March of 2000, numerous soil and mine waste samples were collected from each of the four mine waste features comprising OU1. At the Subsite, nine soil samples were taken from residential properties, two soil samples were taken from public areas such as a picnic pavilion, and four samples were taken from the tailings pile. Lead was detected in the residential property samples at concentrations ranging from 166 ppm to 11,900 ppm, and in the tailings pile samples at concentrations ranging from 3,270 ppm to 35,000 ppm.

No other response actions have been undertaken by the EPA at OU1 using CERCLA authority. The EPA is the lead agency for all on-site investigatory and removal program functions.

2. Current Action

Blood-lead testing by the Madison County Health Department continues. In March 2000, the Health Department received financial assistance from the Agency for Toxic Substances and Disease Registry (ATSDR) to conduct blood-lead screening, health education, and residential lead assessments.

A contractor representing the PRPs continues to collect and assimilate environmental data for the completion of a Site Characterization Study that will include a Baseline Risk Assessment.

C. State and Local Actions to Date

1. State and Local Actions to Date

The Missouri Department of Health (MDOH) has provided health education expertise to the Madison County Health Department and the Madison County Commissioner has remained active in following Site issues. Along with the commissioner, several local citizens have provided valuable mining history of the area and property access for sample collection. Representatives from the Mineral Area College have provided assistance in community outreach and organizing regular meetings with local officials, participating agency representatives, and concerned citizens.

2. Potential for State/Local Response

The Madison County Health Department is expected to remain involved in a variety of future activities at the site including blood-screening, health education, and residential inspections. The EPA will coordinate all activities associated with this removal action with the MDNR, and the Madison County Health Department.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Section 300.415(b) of the National Contingency Plan (NCP) provides that the EPA may conduct a removal action when it determines there is a threat to human health or welfare or the environment based on one or more of the eight factors listed in Section 300.415(b)(2). The factors which justify a removal action at this Subsite are outlined below.

A. Threats to Public Health or Welfare

1. 300.415(b)(2)(i) -- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants.

Concentrations of lead greater than 400 ppm have been found in one or more samples collected away from dwelling foundations (non-foundation) from nine residential properties at the Subsite with a high concentration of 11,900 ppm. Children living and playing at, or near, these locations have the highest potential to be exposed. Sampling of additional residential properties at the Harmony Lake development may reveal additional areas that will be included in this removal action.

Lead is a metal and a constituent of D008 hazardous waste. Lead is classified by the EPA as a probable human carcinogen and is a cumulative toxicant. The early effects of lead poisoning are nonspecific and difficult to distinguish from the symptoms of minor seasonal illnesses. Lead poisoning causes decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, digestive symptoms (particularly constipation), abdominal cramping, nausea, vomiting, and decreased appetite. With increased exposure, symptoms include anemia, pallor, a "lead line" on the gums, and decreased handgrip strength. Alcohol and physical exertion may precipitate these symptoms. The radial nerve is affected most severely causing weakness in the hands and wrists. Central nervous system effects include severe headaches, convulsions, coma, delirium, and possibly death. The kidneys can also be damaged after long periods of exposure to lead, with loss of kidney function and progressive azotemia. Reproductive effects in women include decreased fertility, increased rates of miscarriage and stillbirth, decreased birth weight, premature rupture of membrane, and/or pre-term delivery. Reproductive effects in men include erectile dysfunction, decreased sperm count, abnormal sperm shape and size, and reduced semen volume. Lead

exposure is associated with increases in blood pressure and left ventricular hypertrophy. A significant amount of lead that enters the body is stored in the bone for many years and can be considered an irreversible health effect.

2. 300.415(b)(2)(iv) -- High levels of hazardous substances or pollutants or contaminants in soils largely at, or near, the surface that may migrate.

Lead has been detected in surface soils and mine waste above levels of concern. Lead-contaminated soils may migrate via airborne dusts, surface runoff, and by people and pets transporting soils/dusts into their homes from the affected areas.

3. 300.415(b)(2)(v) -- Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Weather conditions may cause the lead contamination to migrate. High wind events could cause the lead-contaminated soils to migrate via airborne dusts. Rain or thundershowers may cause the lead contamination to migrate via surface runoff.

4. 300.415(b)(2)(vii) -- The availability of other appropriate federal or state response mechanisms to respond to the release.

There are no other state or federal authorities who are able to respond to the release of hazardous substances at the Subsite.

IV. ENDANGERMENT DETERMINATION

The actual release of a hazardous substance at this Subsite, if not addressed by implementing the response action selected in this Action Memorandum, presents an imminent and substantial endangerment to the health of the public that comes in contact with the Subsite, and to public welfare and the environment. Federal and state agencies are recommending that immediate response actions be taken to reduce potential exposure.

V. EXEMPTION FROM STATUTORY LIMITS

This response action will exceed $2 million dollars and may exceed 12 months in duration, depending on the number of residential yards needing to be excavated. An exemption from the statutory limit is necessary for this action in accordance with CERCLA § 104 (c)(1), 42 U.S.C. § 9604 (c)(1).

There is an immediate risk to public health or welfare or the environment at the Subsite. Concentrations of lead greater than 400 mg/kg have been found in one or more "non-foundation" sample(s) collected from nine residential properties at the Subsite with a high concentration of 11,900 ppm. Concentrations of lead in samples taken from the tailings pile were as high as 35,000

ppm. ATSDR concluded in a health consultation requested by the EPA (attached) that based upon the soil lead levels found at the Subsite, the Subsite poses a significant public health threat. In addition, the incidence of exposure increases during periods when weather allows the residents to spend more time outdoors and when lead levels inside the home may increase due to open windows and doors and the increase in foot traffic from the outside to the indoors. The primary health threat is ingestion of lead by children. Children are particularly susceptible to lead contamination and the harm that results from ingestion of lead is immediate and irreversible, including permanent learning disabilities. The response action described in this Action Memorandum will eliminate the immediate risk posed by soil contamination and direct exposure.

The response actions described are immediately required to prevent, limit, or mitigate an emergency. Following completion of the described response action, site contaminants will be removed from the soil in residential properties described in this Action Memorandum, eliminating the potential for exposure to lead in soils as discussed above. In addition, direct exposure to and potential recontamination of the yards from the tailings pile via wind and water erosion will be eliminated. If these threats are not addressed, residents will continue to be exposed to lead concentrations which could lead to the health effects described above, and wind and surface water erosion will continue to allow the mine tailings to migrate.

Assistance will not otherwise be provided on a timely basis. Neither the State of Missouri, county, nor local governments have the response authority and/or resources to implement the described actions. The high levels found at the Subsite require an immediate response to the health risks posed to the residents as well as direct exposure to, and recontamination from, the tailings pile. It will be some time before the Site Characterization Study and Baseline Risk Assessment are completed for OU1 and a decision is made on how to proceed. A non-time critical removal action or remedial action would not allow this action to occur in the short term. The Enforcement Addendum contains an explanation of enforcement efforts at the Subsite.

VI. PROPOSED ACTIONS AND ESTIMATED COST

A. Proposed Actions

1. Proposed Action Description

Past sampling activities at the Subsite have documented the release of hazardous substances but have not defined the total areal extent. Additional sampling of all residential properties in the Harmony Lake development will be conducted concurrently with this removal action. Additional sampling will also be performed to further define the areal extent of the Harmony Lake tailings pile located south of Harmony Lake. It is likely this sampling will identify more residential properties that exceed the 400 mg/kg removal standard.

Excavation of contaminated soils (generally up to approximately 50 feet away from each foundation or a 100' x 100' area at the residential property's likely building site) to below 400

mg/kg, disposal of excavated soils, and restoration of the excavated areas will be completed at each residential property located around Harmony Lake, and the residences located on the tailings pile south of Harmony Lake. Each residential property will be divided into four quadrants and multi-aliquot surface soil sampling will be performed at each quadrant. Soil sample aliquots will not be collected from within three feet of the residential dwelling to reduce the potential lead-based paint contribution to soil lead concentrations. Multi-aliquot surface soil samples will also be collected from any play areas and gardens, or sand piles and driveways appearing to consist of mine waste. Excavation will be done only in the quadrant(s) or areas where soil samples are equal to, or greater than, 400 mg/kg. Once an action is triggered by having a surface soil sample greater than 400 mg/kg, excavation activities will proceed at that location. The following criteria will be followed during the excavation activities:

For Residential Properties and Picnic Areas:

From 0-12 inches of excavation will proceed until a 400 mg/kg total lead cleanup standard is met.

At 12 inches, if levels exceed 400 mg/kg lead, a permanent physical barrier (heavy orange plastic mesh) will be placed at the interface between the contaminated soil and clean backfill.

For Garden Areas:

From 0-24 inches of excavation will proceed until a 400 mg/kg total lead cleanup standard is met.

At 24 inches, if levels exceed 400 mg/kg lead, a permanent physical barrier (heavy orange plastic mesh) will be placed at the interface between the contaminated soil and clean backfill.

A risk-based soil screening level for lead in surface soils of 400 mg/kg has been developed by the EPA for standard residential settings. This screening level has been selected by EPA Region 7 as the action level for this removal action for the following reasons:

- The action level is consistent with the revised interim guidance for lead-contaminated Superfund sites, Office of Solid Waste and Emergency Response Directive 9355.4-12
- The Integrated Exposure Uptake Biokinetic Model's parameters cannot be modified in a reasonable time period considering the circumstances at this Subsite
- Resources are available for a removal action using this action level at a subsite of this magnitude

The EPA has coordinated with the ATSDR regarding the 400 mg/kg cleanup level.

Excavated soil will be consolidated on site at the Harmony Lake tailings pile located south of Copper Mines Road prior to capping; or at an off-site location to be determined at a later date. All soil disposal will be in compliance with the land disposal restrictions for lead-contaminated waste. The excavated areas will be backfilled with clean soil with a lead concentration not to exceed 240 mg/kg and the areas restored.

The Harmony Lake tailings pile, currently estimated to be 30 acres, will be graded for gentler slopes where needed, covered with 1 foot of clean soil, and seeded for re-vegetation.

The proposed action will reduce the potential for human exposure to lead through contact with soils and will reduce the potential for lead transport off site by surface runoff. Any off-site disposal facility will meet the applicable regulatory requirements for CERCLA off-site disposal.

All Subsite sampling activities for comparison to the cleanup levels will be conducted in accordance with an approved Quality Assurance Project Plan.

Monitoring and site control measures, such as dust suppression by spraying water and storm water runoff control measures, will be implemented to ensure removal activities do not expose nearby populations and site workers to harmful levels of contaminants.

Air monitoring will be conducted during removal activities, if necessary, to ensure that airborne dusts do not contain harmful levels of lead. No visible dust will be allowed to leave the excavation areas.

2. Contribution to Remedial Performance

Site assessment activities have not been completed. However, the early results from private residences indicate the presence of lead throughout the Subsite. The removal actions described in this Action Memorandum will be consistent with future remedial actions that may be taken at this Subsite.

3. Applicable Relevant and Appropriate Requirements (ARARs)

Section 300.415(j) of the NCP provides that fund-financed removal actions under Section 104 and removal actions pursuant to CERCLA Section 106 shall, to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental facility citing laws. The following specific ARARs have been identified for this action:

- Subtitle D of the Resource Conservation and Recovery Act (RCRA), Section 1008, Section 4001, et seq., 42 U.S.C. §6941, et seq., State or Regional Solid Waste Plans

and implementing federal and state regulations. All excavated soil disposed in a sanitary landfill will comply with Subtitle D requirements. If other disposal alternatives are used, Subtitle D of RCRA may be applicable.

- Occupational Safety and Health Act, 29 C.F.R. part 1910 will be applicable to all actions. Requirements of 29 C.F.R. part 1910 will be followed.

- Subtitle C of RCRA, 42 U.S.C. Section 6901, et seq., 40 C.F.R. Part 260, et seq. and implementing federal and state regulations for contaminated soils that exhibit the characteristic of toxicity and are considered RCRA hazardous waste.

  Subtitle C of RCRA is potentially applicable for the removal of soils contaminated with lead from smelter emissions fallout or lead of unknown origin. However, soils contaminated with lead from extraction, beneficiation, or processing of ores are exempt from the requirements of RCRA, Subtitle C pursuant to the Bevill Amendment, Section 3001(b)(3)(A) of RCRA, 42 U.S.C. § 6921(b)(3)(A), and implementing regulations, 40 C.F.R. § 261.4(b)(7).

- 40 C.F.R. Subpart S - corrective action for solid waste management units and temporary units. The EPA Region 7 may designate the soil repository area as a corrective action management unit or a temporary unit pursuant to 40 C.F.R. §§ 264.552 and 264.553. Such designation may be made by the Regional Administrator upon determination of the location of the repository.

- Department of Transportation (DOT) regulations, 49 C.F.R. Parts 107, 171-177.

  DOT hazardous material transportation regulations may be relevant and appropriate for transportation of the contaminated soils to the disposal facility.

A copy of this Action Memorandum will be provided to state personnel along with a written request for the identification of known potential state ARARs. Their written response is expected to be received within 30 days of the request. These ARARs will be evaluated per the EPA guidance on consideration of ARARs during removal actions.

4. Project Schedule

Response activities are anticipated to begin sometime in October 2000 and require approximately one year to complete. If other areas are discovered which require additional work, this may effect the completion time.

5. Post-Removal Site Controls

A post-removal site control plan will be developed by EPA for the tailings area of the Subsite. It is expected that post-removal site controls may consist of mowing, fertilization, re-seeding of the vegetation and providing soil amendments as necessary to achieve a self-sustaining vegetative cover. If possible, restrictions will be obtained for the tailings area of the

Subsite to prevent re-exposure of the tailings and use of the property that would attract children for long periods of time.

B. ESTIMATED COSTS

Extramural Costs:

Removal Clean-up Contractor Costs	$2,249,656
START Contractor	$ 280,000
Extramural Costs Contingency	$ 252,965
SUBTOTAL EXTRAMURAL COSTS	$2,782,621

Intramural Costs:

EPA Direct Costs	$ 60,000
EPA Indirect Costs	$1,546,386
SUBTOTAL INTRAMURAL COSTS	$1,606,386
TOTAL REMOVAL PROJECT CEILING	$4,389,007

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will continue to potentially expose residents, particularly children, to the contaminated soils exceeding federal action levels in their residential yards.

VIII. OUTSTANDING POLICY ISSUES

None.

IX. ENFORCEMENT

There is an Enforcement Addendum for this Subsite. For NCP consistency purposes, it is not part of this Action Memorandum.

X. RECOMMENDATION

This decision document represents the selected removal action for the contaminated soils at residential properties and the tailings pile at the Harmony Lake Subsite of the Madison County Mine Site OU1, Madison County, Missouri. The removal action was developed in accordance with

CERCLA, as amended, and is not inconsistent with the NCP. This decision is based on the Site Characterization Study sampling results conducted in February 2000.

Conditions at the Subsite meet NCP Section 300.415(b) criteria for a removal action and I recommend your approval of the proposed removal action. The total project ceiling is $4,389,007 and of this $2,782,621 is from the Regional Removal Allowance.

Approved:

Gene Gunn (signature) 9/8/00

for Michael J. Sanderson, Director
Superfund Division

Date

Attachments

ENFORCEMENT ADDENDUM

To Request For Removal Action, 12-month, and $2 Million Exemptions at the Harmony Lake Subsite of Operable Unit 1 of the Madison County Mine Site, Madison County, Missouri.

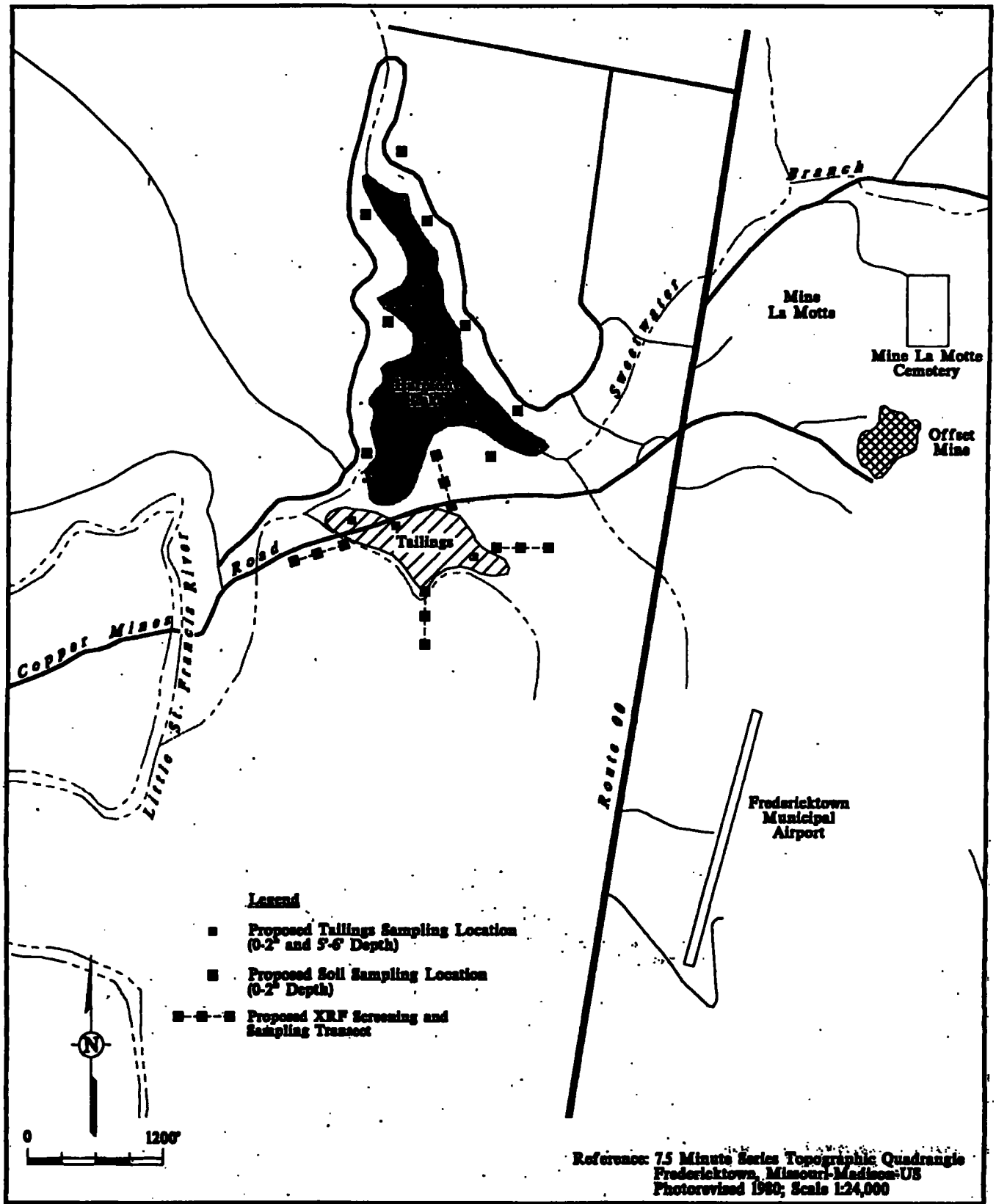
An in-house potentially responsible party (PRP) search was performed in 1998 to determine if there were viable PRPs at Operable Unit 1 (OU1). Historical information showed that OU1 was transferred as one piece of property known as the "Mine La Motte Mine." Based on property ownership records, leases, and mining production data, EPA determined that NL Industries (NL) and The Doe Run Resources Corporation (Doe Run) were successors to former operators of the Mine La Motte Mine. Based on this information, EPA invited NL and Doe Run to negotiate for performance of a Site Characterization and Baseline Risk Assessment at OU1. On March 30, 1999, an Administrative Order on Consent (AOC) was entered into by EPA, NL, and Doe Run for performance of the above activities. During sampling pursuant to the AOC, high lead concentrations were found in soil samples taken from residential properties, recreation areas and the adjacent tailings pile at the Subsite.

EPA invited Doe Run and NL, as well as Gary and Victoria Montgomery, current owners of the tailings pile, to negotiate an Administrative Order on Consent for performance of the removal action subsequent to the signing of the Action Memorandum. Doe Run and NL argued that evidence showing their predecessors operated the Mine La Motte Mine did not necessarily mean they operated at Harmony Lake specifically. In the absence of documentation of their operations specifically at Harmony Lake, they would not agree to perform a removal action at the Subsite.

At this time, the EPA does not possess any information showing the predecessors of Doe Run or NL operated at Harmony Lake. In fact, we do not have any definitive evidence as to who operated at Harmony Lake. The circumstantial evidence we do have supports the PRPs' contention they did not operate at Harmony Lake. Consequently, we recommend not issuing a UAO at this time.

Subsequent to the signing of the Action Memorandum, the EPA intends to negotiate an AOC with Gary and Victoria Montgomery for only access, restrictions on the use of the property, and post-removal site controls. The EPA will perform the removal action itself while continuing efforts to obtain PRP operational history, and pursue the PRPs thereafter in an effort to recover its cost.

Attachment 1



ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
ESC Reston, Virginia 20190
703-709-6500

Figure 3
Proposed Sampling Locations
Harmony Lake Tailings Pile
Madison County Mines OU1
Fredericktown, Missouri

NL85LDWG

- Author Information -

Author: Benjamin Puesta Action Date: 06/13/2000
User ID: BXP0 Time: 10:30 AM

- Site Specific Information -

Name: MADISON MINE (ANSCHUTZ MINING CORP)
Site Qualifier: TECHNICAL ASSISTANCE
Address: 401 N MINE LAMOTTE ST City: FREDERICKTOWN
County: MADISON State: MO Zip Code: 63645
CERCLIS #: MOD098633415 CRS #: 70LT Region: 07 Congr. District: 08

- Site Status -

(1): NPL **X** Non-NPL RCRA Non-Site Specific SACM Federal*
(2): Emergency Response Remedial **X** Removal Other:

- Activities -

1 Incoming Call	Public Meeting*	Health Consult*	Site Visit*
Outgoing Call	Other Meeting	Health Referral	1 Info Provided
Confrnce Call	1 Data Review	1 Written Respons	Training
Incoming Mail	Trip Report	Worker Health	1 Tech Assist
1 Immed Removal	Other Activity:		

- Requestor and Affiliation -

Requestor: BRUCE MORRISON
Affiliation: EPA, SUPR/FFSE
Work Phone: (913)551-7755 Other Phone: ( ) -
Address: 901 N. 5TH STREET
KANSAS CITY, KS 66101
County: WYANDOTTE Congressional District: 00

- Contacts and Affiliations -

BRUCE MORRISON	EPA, SUPR/FFSE
JOHN COOK	EPA, SUPR/FFSE
ARTHUR BUSCH	STATE HEALTH, MDOH

Program Area: TECHNICAL ASSISTANCE

Enclosures: N
Signature: Date: 07/19/200

CC: John Cook, EPA
Arthur Busch, MDOH

MADISON MINE (ANSCHUTZ MINING CORP) Action Date: 06/13/2000

- Narrative Summary -

Statement of Issues

The Environmental Protection Agency (EPA) requested that the Agency for Toxic Substances and Disease Registry (ATSDR) review analytical soil data from Harmony Lake, a residential subsite of the Madison County Mines site located in Missouri. EPA is considering a time-critical removal based on the February 2000 sampling which shows elevated levels of lead in the residential soils. EPA has requested ATSDR to determine if the levels of lead in the soils are of immediate concern to the residents of Harmony Lake, particularly the children, and to determine if the levels and the children's exposure potentials warrant a time critical removal.

Background

Lead mining in Madison County began in the 1700's and continued into the mid-1800's in the section of southeastern Missouri known as the "Old Lead Belt". The lead production left many tailings deposits and chat piles in several counties. Seven of these mine tailings deposits in Madison County are located within six miles of each other and cover 645 acres. Although the site is not on EPA's National Priorities List (NPL), the site is currently being investigated by EPA's Removal Program. It is considered an NPL caliber site. One of the tailings piles is situated in the Harmony Lake area, a populated subsite within the Madison County Mines Site. Unlike the tailings piles in the St. Francois County Big River Mine Tailings Site, which is also part of the Old Lead Belt, most of the tailings piles in Madison County are found in rural areas. EPA reports that there are approximately 50 full-time and 25 part-time residences at the Harmony Lake subsite. The part-time residences are used almost full-time in the warmer months, and are not just occasional weekend getaways. The full-time and part-time residences consist of trailers, mobile homes and permanent single-family homes.

Discussion

In February 2000, EPA sampled surface soil at 10 residential homes in the Harmony Lake subsite and surrounding area. The concentrations of lead ranged from 166 parts per million (ppm) to 19,100 ppm. Across the highway from one of the residences, tailings piles were had a lead concentration as high as 35,000 ppm. Nine of 10 residences sampled were greater than 400 ppm lead. The value of 400 ppm was chosen as a reference level because, EPA proposed in their Action Memorandum, that "Residences where soil in their yard is equal or greater than 400

- Narrative Summary (continued) -

milligrams per kilogram (mg/kg) will be included in the removal action level." The value of mg/kg is the same as parts per million (ppm).

Lead concentrations in soil can influence blood lead levels in humans, especially in young children between the ages of six months and 72 months. Young children have an increased risk from lead exposure over adults because they tend to engage in more hand-to-mouth activity (such as putting toys and other non-food items in their mouths) and lead is more readily absorbed by their bodies via the gastrointestinal tracts.
The impact of exposure to lead in young children and developing fetuses is greater than exposure to adults because of rapid cell and organ system development which occurs from gestation to 72 months. A fetus is exposed to lead if his mother has lead in her body. A woman who has been exposed to lead may pass that lead onto her unborn child and during breast-feeding after the child is born.

During warm weather, young children play outdoors more often and for longer periods, thus their potential exposure has increased. The frequency of traffic from the outside of the house to the indoors increases and windows and doors are left opened more often. These activities increase the potential for lead contaminated soils in the yard to become dust that could migrate into the home, potentially increasing the risk for constant exposure.

Human exposure to lead can cause a variety of health problems in young children and adults. Some of the health effects lead exposure can cause may be subtle and not easily noticed. The health effects on young children are more serious than in adults because lead affects the neurological and physiological development of the child. Children with elevated blood lead levels may experience behavioral disorders, learning disabilities, hyperactivity, slowed physical growth, developmental delay, hearing loss, abdominal pain, anemia and unexplained seizures. Adults with elevated blood lead levels may experience constipation, wrist drop, joint pain, memory loss, difficulty in concentrating, abdominal pains, anemia, infertility or affects on the brain.

Conclusions

1. Considering the soil lead levels in residential areas, the site poses a significant public health threat.

2. The incidence of exposure increases during periods when weather allows the residents to spend more time outdoors and when lead levels

MADISON MINE (ANSCHUTZ MINING CORP) Action Date: 06/13/2000

- Narrative Summary (continued) -

inside the home may increase.

3. Significant, long-term health problems may develop from exposure to lead, especially in young children.

- Action Required/Recommendations/Info Provided -

ATSDR concurs with EPA that a time-critical removal is necessary to protect the community from continued exposure to lead.